

Claims

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1. A communications processor apparatus for integrating communication between a plurality of electronic devices having data communication capability, such as protective relays, meters, terminal devices and computers, present at a given location in a power system, such as a substation, or connected remotely thereto, the apparatus comprising:

an electronic network system having a plurality of port positions to which electronic devices may be connected, including at least one port position to which an apparatus for entry of control commands may be connected and at least one port position through which data obtained from said electronic devices may be provided;

means for storing and retrieving data obtained from the electronic devices;

means for processing the data obtained from the electronic devices; and

control means for controlling the flow of data and control commands within the apparatus and between said ports.

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2. An apparatus of claim 1, wherein the ports to which protective relays or meters are connected are identified as ^{Intelligent Electric Device (IED)} IED ports, and wherein the ports to which a terminal or modem device are connected are identified as master ports, and wherein the apparatus includes at least one master port and at least six IED ports.

3. An apparatus of claim 2, wherein the apparatus includes a port to which a printer may be connected for printing out data obtained from the IED ports.

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4. An apparatus of claim 1, including means for configuring the communication parameters of each

port for proper data communication with the device connected thereto.

a ⁴/₅. An apparatus of claim ¹/₄, including means for automatically configuring a port for selected devices.

a ⁵/₆. An apparatus of claim ¹/₄, wherein the communication parameters include baud rate, number of data bits, stop bit and parity bit.

Sub ⁷/_{a2} ~~7. An apparatus of claim 1, including a plurality of quad universal asynchronous receiver-transmitter means, each of which services a plurality of ports for the input/output of data between a device connected to a port and the communications processor apparatus.~~

8. An apparatus of claim 1, wherein the apparatus is responsive to command settings, including user-defined commands to carry out specific functions associated with the settings and commands.

⁸/₉. An apparatus of claim ⁷/₈, including means for automatically requesting of and obtaining data from a particular port device in response to a command setting for said particular port.

⁹/₁₀. An apparatus of claim 1, including a plurality of contact input means for accepting signals from protective relays and a plurality of contact output means for providing output signals.

¹⁰/₁₁. An apparatus of claim ⁹/₁₀, wherein at least one of those output signals is an alarm signal.

¹¹/₁₂. An apparatus of claim 1, including means

for providing time information for synchronizing time clocks for each of the devices connected to said ports.

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~~12~~. An apparatus of claim ¹¹~~12~~, wherein a source of the time information is an externally generated IRIG-B time code signal.

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~~14~~. An apparatus of claim ¹¹~~12~~, including an internal clock for generating the time information.

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~~15~~. An apparatus of claim 1, including means for making the apparatus transparent to received data from a port.

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~~16~~. An apparatus of claim ¹⁴~~15~~, wherein the apparatus can be transparent to ^{received} data from more than one port simultaneously.

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~~17~~. An apparatus of claim 1, including an internal modem to which an external telephone line may be connected for transmission of selected data to a remote location.

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~~18~~. An apparatus of claim 1, wherein the apparatus includes buffer storage associated with each port.

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~~19~~. An apparatus of claim 1, including means for temporarily storing data which has been received from the individual ports and parsed.

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~~20~~. An apparatus of claim 1, including a long-term non-volatile memory for storage of selected data.

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~~21~~. An apparatus of claim 1, including buffer means at each port for separate storage of binary format

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and ASCII format data.

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~~22~~. An apparatus of claim 1, including means for processing and storing fast meter binary data from IED devices.

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a ~~22~~. An apparatus of claim 1, wherein the data processing means includes means for parsing received data in accordance with selected rules.

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~~24~~. An apparatus of claim ²²~~23~~, wherein the parsing rules are preestablished.

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~~25~~. An apparatus of claim ²²~~23~~, wherein the parsing rules are defined by an operator.

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